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Community Empowerment and Data Justice in the AI Economy: A Systematic Review of Community Data Trusts and Collective Data Governance

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Abstract
Communities generate data used in digital services and artificial intelligence, yet their influence over data use and the distribution of resulting benefits can be limited. Community data trusts and related collective arrangements offer possible ways to address this imbalance. This review examines how governance, organizational design, and financial sustainability shape their potential for community empowerment. Searches covering January 2015 to April 2026 used eight bibliographic databases, publisher platforms, and search services. Screening of 1,800 deduplicated records led to the inclusion of 58 publications, which were examined through narrative synthesis. The analysis connects community representation, accountable stewardship, collective decision-making, and benefit sharing with six overlapping operating arrangements: licensing, cooperative membership, marketplace intermediation, public–private partnership, social enterprise, and hybrid funding. These arrangements differ in their possible sources of support and exposure to commercial or institutional influence; none inherently guarantees community control. The review proposes a conceptual framework linking participation and stewardship to authorized data use, financial continuity, and equitable community benefit. Evidence of sustained empowerment and distributive outcomes remains limited, and the original search emphasis on organizational and economic questions constrains coverage of the wider data-justice literature. Community data trusts should therefore be evaluated by the authority communities can exercise, the accessibility of accountability mechanisms, and the distribution of benefits and burdens. The review identifies implications for community organizations, public administrators, and future research on inclusive data governance.

Keywords: community data trusts; community empowerment; data justice; participatory governance; benefit sharing

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Introduction

1. Community data and unequal decision making

Data generated through employment, health care, communication, and everyday services can support research and artificial intelligence (AI). Decisions about their collection, reuse, and economic value are frequently made by institutions whose priorities differ from those of the people represented in the data. Collective data governance raises a social question: how can communities influence decisions that affect their interests and share in the benefits of data use? This question concerns the allocation of authority, the recognition of collective interests, and the capacity to challenge decisions, as well as the protection of individual privacy.

Data about people can concern several individuals and groups at once. Their use can affect workers, patients, neighbourhoods, and cultural communities, including people who never directly supplied the data. Wong et al. (2025) examine the difficulties this creates for governance, while Purtova and van Maanen (2024) question whether an economic understanding of data adequately captures its social characteristics. These perspectives suggest that individual transactions alone cannot resolve every conflict over collective benefit or harm. Community participation deserves attention as an institutional means of negotiating those conflicts.

2. Community data trusts and related arrangements

Community data trusts (CDTs) are considered here as arrangements intended to steward data for a defined community through an identifiable mandate and mechanisms of accountability. The term does not identify a single legal form. A legally constituted trust, a member-owned cooperative, and a data commons can allocate decision rights differently. Delacroix and Lawrence (2019) examine bottom-up data trusts, while Fink (2024) discusses data cooperatives and van Maanen et al. (2024) address data commons. These approaches share concerns about collective governance but should not be treated as interchangeable institutions.

The distinction matters because the name of an initiative provides little evidence of the authority its community actually exercises. A repository may improve research access without giving data contributors a role in approving uses or selecting decision makers. Similarly, a cooperative may have democratic rules but encounter unequal participation in practice. In this review, community accountability is an analytical question rather than an assumed property of every initiative described as a trust, cooperative, or commons.

3. Social relevance and contribution

The social-science literature already examines power, governance principles, and the distribution of value in alternative data arrangements. Micheli et al. (2020) provide a framework for comparing these relationships. Research on workers further connects collective data governance with the capacity to understand and act on information about working conditions (Calacci and Stein, 2023). Indigenous and tribal data governance introduces questions of collective authority, cultural recognition, and the purposes of

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research (Griffiths et al., 2021). Together, these concerns connect the subject to social justice, community welfare, and public administration.

Organizational resources influence whether participation can be sustained. Community representatives may require training, accessible information, independent advice, and time to deliberate. These activities have costs. Business-model scholarship explains how organizations arrange activities and obtain resources (Teece, 2010; Zott et al., 2011), but economic viability alone does not establish a socially legitimate mandate. The present review connects operating arrangements to community authority and the distribution of benefits, treating finance as one condition of durable collective governance.

The contribution is an interpretive synthesis of the community implications of organizational and governance literature. It does not claim to be the first review of collective data governance or a comprehensive review of all data-justice scholarship. Its specific purpose is to examine how participation, accountability, and benefit sharing interact with the practical arrangements through which collective data initiatives operate in the data and AI economy.

4. Review questions

The review addresses four questions. First, how do CDTs and related arrangements provide opportunities for community participation and collective decision-making? Second, what mechanisms can support accountable stewardship and equitable benefit sharing? Third, how might operating and funding arrangements strengthen or constrain community control? Fourth, what social, institutional, and technological barriers limit inclusive and sustainable governance? These questions guide the interpretation of a literature corpus originally selected for its relevance to collective governance and organizational participation in the data economy.

Material and Method

1. Review design and scope

The review used a systematic search and narrative synthesis, with reporting organized around PRISMA 2020 (Page et al., 2021). The search addressed collective data governance in the context of AI, the data economy, and organizational value creation. The present analysis interprets that evidence in relation to community empowerment and data justice. This change in analytical emphasis does not constitute a new search or a comprehensive reassessment of the wider social-justice literature. Conceptual proposals, descriptions of institutions, and evidence of implemented outcomes are treated as different forms of contribution.

2. Search strategy

Eight sources were searched: Scopus, Web of Science, IEEE Xplore, ACM Digital Library, ScienceDirect, SpringerLink, Wiley Online Library, and Google Scholar. These comprise bibliographic databases, publisher platforms, and a scholarly search service. For Google Scholar, the first 200 results were considered. The publication window was

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January 2015 to April 2026, and the final search was performed on 1 May 2026.

The reported search expression was: (“community data trust” OR “data trust” OR “data cooperative” OR “data commons” OR “collective data governance”) AND (“AI” OR “artificial intelligence” OR “data economy” OR “data monetization” OR “platform economy” OR “business model” OR “value creation”).

The economic terms delimit the evidence base. Studies focused solely on community rights, public participation, or justice without the specified economic or AI terminology may have been missed. Accordingly, the synthesis examines social implications within the retrieved organizational literature rather than estimating the full extent of research on community empowerment. Background and methodological references are distinguished from publications included in the review corpus.

3. Eligibility and selection

The eligibility criteria covered English-language publications addressing CDTs or analogous collective data-governance structures in relation to the data economy, organizational models, or AI. The original criteria admitted journal articles, conference papers, and selected scholarly preprints. Preprints are not classified as peer-reviewed publications. Opinion pieces, editorials, duplicate records, studies restricted to internal corporate datasets, and cybersecurity papers without a governance or organizational dimension were excluded.

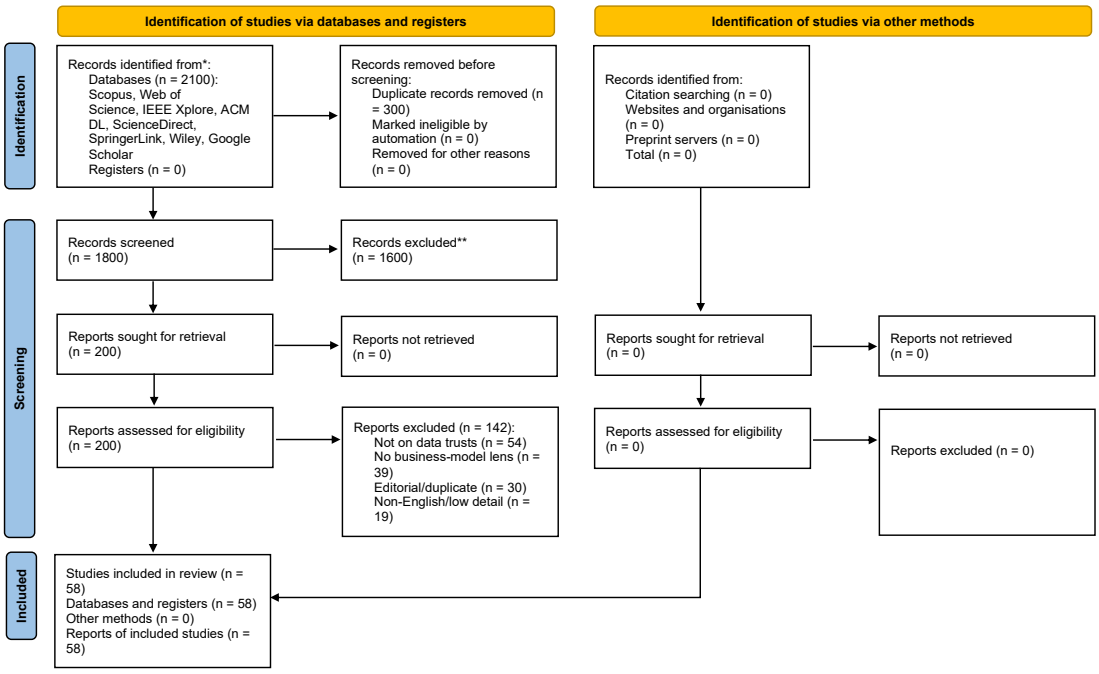

Figure 1. Reported PRISMA selection flow for the original review corpus. Counts and exclusion categories are retained from the source manuscript; the selection process predates the present interpretive emphasis on community empowerment.

The reported selection process identified 2,100 records and removed 300

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duplicates, leaving 1,800 records for screening. Two reviewers independently screened titles and abstracts, with disagreements resolved through consensus. A total of 200 reports underwent full-text assessment, and 58 publications were included. The selection flow is retained in Figure 1. Its exclusion categories reflect the original organizational focus, including exclusion of papers without a business-model lens; they should not be read as eligibility criteria for the entire field of data justice.

4. Extraction and narrative synthesis

The extraction fields covered author and year, country of the first author's institution, study type, sector, business-model features, governance dimensions, value-creation mechanisms, and reported challenges. Author affiliation is a bibliographic characteristic and is not treated as the location of an empirical case or as evidence of community representation. The source manuscript identifies Online Resource 1 as the study-level corpus and extraction record.

Narrative synthesis was used because the publications addressed different institutional forms, sectors, and types of evidence. The revised presentation organizes the material around decision rights, participation, stewardship, benefit distribution, and organizational sustainability. These categories provide an interpretive framework; they are not a newly measured index of empowerment. No pooled effect size, comparative performance ranking, or new frequency estimate is reported.

5. Appraisal and evidential limits

The original review reports using adapted Joanna Briggs Institute checklists according to study design. The strength of any conclusion depends on the appropriateness of those adaptations and the underlying appraisal records. Institutional descriptions and conceptual arguments cannot, by themselves, establish improved welfare or reduced inequality. The present synthesis therefore uses conditional language for proposed mechanisms and avoids treating the existence of an initiative as evidence of successful community empowerment.

Results

1. Institutional diversity and the meaning of community control

The literature encompasses trustee-led stewardship, cooperative membership, collectively governed commons, and research data collaborations. These arrangements vary in their purposes, membership boundaries, and sources of authority. O'Hara (2020) discusses data trusts as a governance approach; the data-commons literature addresses collective rules and relationships around shared resources (van Maanen et al., 2024). Fia and van Maanen (2025) draw attention to the meaning of community within collective data governance. Institutional diversity is therefore a central feature of the evidence, rather than an obstacle to be removed by applying a single CDT label.

Three distinctions organize the interpretation. Legal form concerns the institution's formal status and obligations. Governance concerns who can make, contest, or revise decisions. Operating arrangements concern how activities are financed and

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delivered. These dimensions overlap, but one cannot be inferred from another. For example, licensing income does not identify whether a trust is democratically governed, and public funding does not establish direct community control.

Table 1. *Institutional distinctions relevant to community empowerment*

Arrangement	Source of authority	Question for community control
Data trust	A stewardship mandate and the applicable institutional or legal obligations	Who defines the mandate, appoints the steward, and can challenge decisions?
Data cooperative	Membership rules and member governance	Who can become a member, vote, and influence priorities in practice?
Data commons	Collectively established rules for a shared data resource	Who sets the rules and resolves conflicts over access and use?
Research data repository	The mandate of the institution operating the infrastructure	Do contributors or affected communities have decision rights beyond data access or consultation?

Note. Interpretive comparison informed by O'Hara (2020), Fink (2024), van Maanen et al. (2024), and Hogan et al. (2022). Categories can overlap; the table does not establish the governance performance of particular initiatives.

2. Participation and accountable stewardship

Bottom-up approaches place community preferences at the centre of decisions over data use (Delacroix and Lawrence, 2019). Their relevance to empowerment depends on whether participation can influence outcomes. Consultation, representation on a board, member voting, and delegated stewardship involve different allocations of authority. The synthesis therefore distinguishes opportunities to express preferences from powers to approve uses, set conditions, or challenge institutional decisions.

Accountability links an institution's mandate to the people whose interests it claims to serve. Paprica et al. (2020, 2023) describe requirements for the operation and governance of data collaborations, while Rinik (2020) examines data trusts from the data subject's perspective. These contributions support attention to clear responsibilities, transparent procedures, and the ability to question the steward's conduct. The presence of such provisions should be assessed separately from evidence that communities can use them effectively.

Stewardship also involves documenting datasets, maintaining quality, and managing access. Recommendations for FAIR data services address aspects of this operational work (Koers et al., 2020). However, technical quality does not determine whether a proposed use is socially acceptable. Communities may reasonably reject a technically feasible use because its purpose, likely consequences, or distribution of benefits conflicts with their priorities. Professional stewardship and community authorization therefore perform complementary functions.

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3. Collective interests and benefit sharing

Collective governance responds to interests that exceed an individual data transaction. Duncan (2023) examines collective intermediaries in governing data production, while Wong et al. (2022) connect data protection with the common good. These perspectives broaden the assessment of benefits beyond payment to individual contributors. Benefits may include improved services, research directed toward community priorities, greater access to information, and resources for collective activities. Their desirability and distribution depend on the community and the use concerned.

Financial returns remain relevant, but their existence does not establish fairness. An institution can generate income while leaving some members without meaningful influence or excluding people with limited digital access. Conversely, a publicly supported arrangement may offer valuable shared services without distributing revenue. The appropriate question is who gains, who bears the burdens of participation or exposure, and who decides how these trade-offs are managed.

The reviewed concepts support the possibility of more equitable arrangements, but they do not establish a uniform effect on inequality. Claims about improved welfare require evidence of outcomes, their distribution, and the conditions under which they arose. In the present synthesis, benefit-sharing mechanisms are interpreted as institutional possibilities whose implementation and consequences need separate assessment.

4. Operating arrangements and community autonomy

Six recurring arrangements from the original synthesis are retained as overlapping organizational configurations: licensing, cooperative membership, marketplace intermediation, public–private partnership, social enterprise, and hybrid funding. They are not equivalent classification units: some describe revenue mechanisms and others describe ownership or mission. Table 2 makes their relationship to community governance explicit instead of presenting them as mutually exclusive business-model categories.

Licensing and service provision may finance stewardship, but dependence on a small number of buyers can influence institutional priorities. Cooperative membership can connect governance with member interests, while also requiring resources for participation and administration. Public support and partnership arrangements may help finance shared infrastructure, although participating institutions can hold unequal bargaining power. Social enterprises and hybrid arrangements can combine income sources, but their community mandate still requires enforceable rules and practical oversight.

These are analytical trade-offs rather than observed rankings of financial or social performance. Work on data-trust services contributes to understanding operational arrangements (Lomotey et al., 2022), while research on data cooperatives considers collective organization and equitable digital communities (Bühler et al., 2023). Neither an income mechanism nor an organizational label is sufficient evidence of long-term community empowerment.

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***Table 2**. Operating arrangements and possible implications for community governance*

Arrangement	Possible support	Community governance issue
Licensing	Fees for authorized data use	Community approval of purposes, restrictions on reuse, and dependence on data buyers.
Cooperative membership	Member contributions and income from services or other activities	Accessible membership, equitable voting, participation costs, and treatment of non-members.
Marketplace intermediation	Fees for connecting authorized users and data providers	Whether incentives to increase transactions can conflict with collective priorities.
Public–private partnership	Public resources and partner contributions	Allocation of decision rights and safeguards against dominance by better-resourced partners.
Social enterprise	Grants, donations, service income, or a combination	Protection of the community mission and accountability when funder priorities change.
Hybrid funding	Several complementary income sources	Clear responsibility and transparent terms across different funding relationships.

Note. These are overlapping analytical configurations, not validated performance categories. The comparison draws on the organizational discussion in Lomotey et al. (2022), Bühler et al. (2023), and Paprica et al. (2023). It does not classify the NCI Cancer Research Data Commons as a fee-based marketplace.

5. Lessons from contrasting settings

The Sidewalk Toronto experience illustrates the difficulty of establishing legitimacy around urban data governance. Artyushina (2020) and Austin and Lie (2021) examine the proposed urban data trust and its difficulties. The case supports scrutiny of the relationship between institutional proposals and public authority. It does not establish that a single governance defect explains every failed initiative or that a particular trust model will succeed elsewhere.

Health data arrangements illustrate another distinction. The OneFlorida Data Trust and the NCI Cancer Research Data Commons provide examples of infrastructure for research data access and use (Hogan et al., 2022; Wang et al., 2024). Their contribution to research does not, on its own, demonstrate democratic control by patients or a transaction-fee marketplace. They are considered here as contextual examples of stewardship and public-value infrastructure, with community decision rights treated as a separate question.

Personal data cooperatives and participation by rare-disease communities bring different governance concerns into focus. Hafen (2019) describes cooperative approaches to data donations and health research, while Smith (2022) examines participation in data-

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trust governance. These contributions make the relationship between contributors, organizational purposes, and research priorities visible. Their relevance should be assessed within their institutional settings rather than generalized to every health repository.

Indigenous and tribal data governance foregrounds collective authority and culturally grounded priorities (Griffiths et al., 2021). African data-trust scholarship similarly raises questions about the suitability of governance arrangements in different institutional contexts (Olorunju and Adams, 2024). These bodies of work caution against assuming that one imported legal or organizational model will represent all communities adequately. They also show why the community's own definition of legitimate representation matters to institutional design.

6. Barriers to inclusive governance

Participation can be constrained by time, language, digital literacy, and unequal access to expertise. Collective arrangements may require members to evaluate technical proposals or negotiate with institutions possessing substantially greater resources. The relationship between access and the ability to understand and use data is particularly relevant in worker governance (Calacci and Stein, 2023). Formal opportunities to participate can therefore coexist with practical inequalities in influence.

Financial continuity presents a further problem. Stewardship, community engagement, and independent oversight require recurrent support. Different funding arrangements can create dependence on grants, public budgets, member contributions, or commercial demand. Research on health and social-care cooperatives provides a sectoral context for examining these organizational questions (Lauer et al., 2026). The available synthesis does not justify a numerical claim about how many initiatives are grant-dependent or which funding mechanism performs best.

Technical interoperability, access management, and the scope of permitted reuse also affect implementation. Spatial data trusts illustrate the interaction of data-specific requirements and governance arrangements (Radosevic et al., 2023). These issues can increase the resources needed for participation and stewardship, but technological solutions do not resolve disagreements about representation, community boundaries, or acceptable purposes. Such disagreements require social and institutional processes.

Discussion

1. Community empowerment as an allocation of authority

The central implication is that empowerment should be examined through the authority people can exercise over consequential decisions. Access to information and invitations to participate are relevant, but their value depends on whether they affect decisions and permit challenge. A community may be well informed yet unable to reject a proposed use. Conversely, delegated stewardship may provide meaningful protection if the mandate is clear and the steward remains answerable to the community. Evaluation must therefore attend to the relationship between representation, decision rights, and accountability.

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This interpretation extends the organizational focus of the review without claiming that social concerns are new to data-governance scholarship. Micheli et al. (2020) already place power and value distribution within the analysis of alternative governance models. The present synthesis adds an explicit connection between those concerns and the recurrent resources needed to sustain participation and stewardship. Its contribution is a set of relationships for institutional analysis, not a validated measure of community empowerment.

Community itself requires scrutiny. Membership boundaries can privilege organized or technically confident participants while leaving out people affected by data use. Representatives may also have interests that differ from those of less visible members. Attention to collective agency must therefore include disagreement within communities, protections for minority positions, and the possibility of representative capture. Treating a community as a single, uniform voice would obscure these problems.

2. A conceptual framework for community benefit

The proposed framework connects five elements: community priorities and representation; accountable decision-making; professional stewardship; authorized data use supported by a viable operating arrangement; and the distribution and review of benefits and harms. Table 3 translates these elements into questions and possible indicators for future evaluation. The framework is a conceptual proposal derived from the synthesis and has not been tested as a causal model or measurement instrument.

Representation establishes whose interests enter the process. Decision rules specify how those interests influence authorization and how disputes are addressed. Stewardship supplies the practical capacity to implement decisions and manage data responsibly. Funding supports these functions but can also introduce external influence. Evaluation then considers whether the resulting uses serve community priorities and whether benefits and burdens are fairly distributed. Feedback should allow the community to revise priorities, replace representatives, or change institutional arrangements when necessary.

This framework does not assume that all data should be commercialized or that additional data use is always beneficial. An accountable decision may authorize restricted research, require different terms, or reject a proposed use. Likewise, continued operation is not sufficient evidence of success if the institution survives by weakening its community mandate. The relevant outcome is the relationship between institutional continuity and the community's capacity to govern consequential uses.

***Table 3**. Proposed framework for evaluating community authority and benefit*

Dimension	Evaluation question	Possible evidence
Representation	Whose interests shape priorities and who remains excluded?	Membership rules; selection of representatives; participation by less visible groups.

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Decision rights	Which decisions can the community approve, revise, or contest?	Voting rules; delegated powers; documented decisions and reasons.
Accountability	Can people understand decisions and obtain a response to concerns?	Accessible reports; complaint procedures; responses and remedial actions.
Stewardship	Are authorized purposes translated into responsible data practice?	Access records; data-quality documentation; oversight of permitted uses.
Financial continuity	Can governance continue without surrendering community priorities?	Funding terms; budget for participation; dependence on individual funders.
Benefit distribution	Who receives benefits and who bears costs or harms?	Distribution of services and returns; participation costs; community assessments.

Note. Author-proposed questions and candidate indicators for future evaluation. These indicators were not measured or validated in this review.

3. Implications for community organizations and public administration

For community organizations, the analysis suggests beginning with the community mandate and the decisions members want to influence. A charter can identify membership, representative selection, permitted purposes, and procedures for reviewing decisions. Accessible summaries of proposed uses and funding agreements can make oversight more practical. These are design recommendations; their effectiveness should be assessed in the setting where they are implemented.

Public administrators can support community participation by financing independent advice, accessible deliberation, and stewardship capacity alongside technical infrastructure. Funding conditions should make the distribution of authority visible and require explanations of how community priorities shape uses. The discussion of African data trusts reinforces the need to consider institutional context rather than presume that a familiar organizational form will work identically across jurisdictions (Olorunju and Adams, 2024).

Educational support also has a role. Participants need enough understanding to evaluate purposes and consequences without being expected to become technical specialists. Plain-language materials, opportunities to question experts, and support for representatives may help reduce unequal participation. Their contribution should be measured through changes in comprehension and influence, rather than by counting training sessions alone.

For researchers and AI developers, community authorization should be understood as an ongoing relationship with an accountable institution. A contractual right to access data does not establish agreement about every subsequent use. Clear purposes, reporting arrangements, and procedures for addressing concerns can make that

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relationship more transparent. The feasibility and legal effect of particular conditions depend on the relevant jurisdiction and institutional design.

4. Priorities for further research

Longitudinal research is needed to examine whether participation changes decisions and whether those changes persist when funding or institutional leadership changes. Studies could compare formal governance rules with meeting records, community accounts, and documented responses to contested uses. Such comparisons would help distinguish procedural commitments from practical influence.

Research on benefit distribution should consider non-participants and disadvantaged members alongside active representatives. Financial returns, improved services, privacy burdens, and participation costs should be assessed separately before drawing an overall conclusion about community benefit. Comparisons of funding arrangements should also examine whether particular dependencies affect the institution's ability to refuse uses that conflict with its mandate.

Cross-context studies can clarify how community authority interacts with cultural practices, public institutions, and available infrastructure. Evidence from worker groups, health communities, and Indigenous governance should retain its contextual specificity. Future reviews should broaden searches to include community empowerment, participatory governance, social justice, collective rights, and relevant regional literature, with eligibility and extraction rules specified before screening.

5. Limitations

The original search placed collective governance within an economic and organizational frame. Its exclusion of publications without a business-model lens limits the present review's coverage of empowerment and justice. The revised interpretation cannot remove that selection constraint. English-language restrictions and the use of only the first 200 Google Scholar results may further narrow coverage. The findings should therefore be understood as a socially focused interpretation of a bounded corpus.

The literature also combines conceptual proposals, institutional descriptions, and empirical research with different evidential strengths. The synthesis does not establish that CDTs cause lower inequality, stronger trust, or improved welfare. No standardized comparison of social outcomes is available from the analysis presented here, and descriptions of successful initiatives may give limited attention to dissent, exclusion, or unsuccessful implementation.

Several reporting details constrain reproducibility. The manuscript does not specify database-level search adaptations, the full procedure for assessing preprints, design-specific appraisal adaptations, or study-level appraisal results. The retrospective registration and the corpus identified as Online Resource 1 are material to evaluating the reported search and selection process. Until these records are accessible and reconciled, the review counts and appraisal claims cannot be independently audited from the article alone.

Finally, trusts, cooperatives, commons, and research repositories cannot be assumed to share the same legal obligations or community mandate. Their inclusion

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supports comparison of governance problems, but limits generalization across institutional forms. The proposed framework offers questions for subsequent research rather than a universally applicable institutional model.

Conclusion

Community data trusts and related arrangements provide possible institutional routes for communities to influence data use and negotiate shared benefits in the AI economy. Their potential depends on how authority is allocated, whether stewardship is accountable, and whether participation can be sustained. Legal labels, technical infrastructure, and financial viability each provide incomplete evidence of empowerment when considered alone.

This review connects community representation and benefit sharing with the organizational resources needed to support them. Its six overlapping operating arrangements highlight different funding possibilities and dependencies, while the conceptual framework identifies questions for evaluating community authority and distributive outcomes. The evidence supports careful institutional design and further empirical investigation; it does not establish that collective data arrangements automatically produce social justice. For community organizations and public administrators, the practical priority is to make decision rights, accountability, and the distribution of benefits and burdens visible and open to challenge.***

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Generative AI was used to assist with restructuring, substantive redrafting, language revision, and the preparation of revised tables for this manuscript. This assistance did not involve conducting the reported original database searches, screening the original review corpus, or producing new empirical observations. The reported study-selection counts originate from the preceding manuscript. The authors are responsible for verifying the references, interpretations, review records, and final text before submission.

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